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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

JOLLEY, KIRSTEN

ART UNIT	PAPER NUMBER
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1762

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/748,457

Applicant(s)

NGUYEN, ANDREW

Examiner

Kirsten C. Jolley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-31 and 33-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18, 19, 22, 33-37, 40, 41 and 43-45 is/are allowed.
- 6) ☒ Claim(s) 16, 17, 20, 21, 23-31, 38, 39, 42 and 46-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/16/07.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. The 35 USC 103(a) rejections over Hasebe et al. alone have been withdrawn in response to Applicant's amendments to the claims requiring that excess solvent liquid is removed from the region above the substrate within the chamber.

2. Applicant's arguments filed January 16, 2007 with respect to the 103(a) rejections over Hasebe et al. in view of Batchelder have been fully considered but they are not persuasive.

Applicant argues that Batchelder fails to disclose or suggest removing excess solvent liquid from the carrier-solvent vapor mixture to form a reduced droplet carrier-solvent mixture, nor would a skilled artisan be motivated to combine or modify the references to provide a means for removing excess solvent liquid from the region above the substrate within the chamber. The Examiner disagrees. As discussed in the prior Office actions, it is the Examiner's position that, while not explicitly stated by Batchelder, Batchelder's process removes excess solvent liquid that does not get transformed into solvent vapor by showerhead 312, to prevent the excess solvent liquid from dropping on the substrate. Batchelder teaches that showerhead 312 has perforations 404 through which solvent vapor is dispersed, the perforations having a diameter of 0.002 inches and spaced one-half inch apart (col. 4, line 60 to col. 5, line 15). The Examiner notes that the size of perforations 404 in showerhead 312 are so small that only vapor could fit through, not drops of liquid solvent. Therefore use of showerhead 312 would inherently form a reduced droplet carrier-solvent vapor mixture and prevent excess solvent liquid that does not get transformed into solvent vapor from dropping onto the substrate, and any excess solvent liquid

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remaining in the showerhead 312 (which is located in the region above the substrate within the chamber) would necessarily be removed at some point after processing is completed and during cleaning of the equipment. *Alternatively*, in a different embodiment illustrated in Figure 10 and discussed in col. 8, line 54 to col. 9, line 15, showerhead 312C uses filter 1006 to absorb and collect solvent liquid and nitrogen gas is passed through the filter to provide a carrier-solvent vapor mixture. When using the showerhead 312C of Figure 10, a reduced droplet carrier-solvent vapor mixture is formed, and the excess solvent liquid remaining in filter 1006 (which is located in the region above the substrate within the chamber) would be removed after processing is completed and when the equipment is cleaned and/or the filter replaced.

With respect to claim 17, Applicant arguments regarding the Gurer reference and dependent claim 17 are convincing. However the claim is now rejected over Hasebe et al. in view of Batchelder, in response to the amendment, as discussed below.

Claim Objections

3. Claims 42, 46, and 48 are objected to because of the following informalities: The Examiner questions whether “polimide” in line 3 of claims 42, 46, and 48 should be --polyimide-- since polimide is not a known chemical. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claims 38-39, 42, and 46-48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

With respect to claims 38-39 and 47, the new phrase “and any combination thereof” appears to be new matter. The Examiner was unable to locate disclosure in the specification that a *combination* of an atomizer and ultrasonic device may be used to either generate a carrier solvent vapor mixture or remove excess solvent.

With respect to claims 42, 46, and 48, the phrase “and any combination thereof” appears to be new matter. The Examiner was unable to locate disclosure in the specification that a *combination* of an organic planarization film, an anti-reflection film, a siloxane spin-on-glass film, a polyimide film, and a polimide [sic] siloxane film may be used as the polymer of the invention.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 16-17, 20-21, 23-31, and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 16, lines 19-20, the limitation “wherein the reduced droplet carrier-solvent mixture helps prevent excess solvent from dropping on the substrate” is vague and indefinite

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because it is not clear how the mixture itself help prevent excess solvent from dropping on the substrate. The Examiner suggests replacing "wherein the reduced droplet carrier-solvent mixture helps prevent..." with --wherein the step of removing excess solvent liquid helps prevent....-. Further, the Examiner suggests adding --liquid-- after "helps prevent excess solvent" to provide further clarification.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 16-17, 20-21, and 23-31, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasebe et al. (US 5,658,615) in view of Batchelder (US 5,472,502).

Hasebe et al. and Batchelder are applied for the reasons discussed in the prior Office action, and discussed above in section 23.

As to claim 17, Batchelder does not disclose the step of detecting excess solvent liquid level. However it is the Examiner's position that, in case of use of showerhead having such small perforations that only vapor could fit through, it would have been obvious to an engineer skilled in the art to have detected (at some point during or after the process) the presence of excess solvent liquid in the showerhead that does not get transformed into solvent vapor or fit through the holes so that it may be removed, or else the solvent liquid would eventually cover/clog the showerhead perforations.

As to new claim 48, it is noted that Hasebe et al. teaches that a resist solution, an anti-reflection coating, or the like may be used as the coating solution in its invention (col. 17, lines 59-61).

Allowable Subject Matter

10. Claims 18 and 22 and dependent claims 19, 33-37, 40-41, and 43-45 are allowed for the reasons discussed in the Office action of March 10, 2006.
11. Claims 38-39, 42, and 46-47 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 1st paragraph, and the claim objections set forth in this Office action.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C. Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Wednesday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 86--217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Kirsten C Jolley
Primary Examiner
Art Unit 1762

kcj